United States Department of Agriculture
Forest Service
FPM
3620 Interstate 85, N.E.
Doraville, Georgia 30340

Reply to 3420 (Report #84-3-3)

Date April 23, 1984

Mr. Ben Woodham, Forester
ATTN: DRSMI-KL
Redstone Arsenal
Redstone, Alabama 35809

Dear Mr. Woodham:

First, let us extend our appreciation to you for facilitating the visit of April 17, 1984 to look at the dieback in the loblolly pine plantation. After observing the area, discussing the situation with you and conferring with each other, our observations and recommendations are as follows:

The area suffering from the dieback is a loblolly pine plantation covering some 30 acres. The trees are approximately 25 years old. The stand is situated on a small hill with a 6-8 percent slope in all directions. The soil in the affected are has a high clay content. However, some variation is present. As you move away from the top of the hill, the clay content decreases. Thinning and a small clearcut have removed about 80 percent of the trees in the center and 35 percent of the trees on the sides. Logging was completed three weeks prior to our visit.

Within the 30 acre affected area, more than 80 percent of the trees were symptomatic; severity increasing toward the center (top of the hill) of the stand. Symptoms included defoliation (20-70 percent of foliage on affected trees), brown needles (10-60 percent on affected trees) and tip dieback. The dieback was present in 80 percent of the symptomatic trees. It occurred on the outer 1-2 feet of branches in the upper crown. Most of the symptomatic twigs were denuded in this 1-2 foot area. The overall appearance of the trees at first suggested that an insect such as a sawfly had defoliated the twigs. However, closer examination revealed that the needles had not been eaten but cast. No Annosus Root Rot conks were found and the trees exhibited no symptoms of littleleaf disease.

Growth of the symptomatic twigs during the Spring of 1983 was approximately 5-6 inches. Foliar buds had developed on most of the symptomatic twigs and on the day of our visit more than 50 percent of these buds were exhibiting new flushes of needle growth (1/4 - 1/2 inch).

We believe that the cause of the problem is a combination of several factors. The drought conditions that have occurred in this area since 1980 have played the most important role. Even though yearly rainfall averages may be close to normal, much of it has occurred very early or very late in the growing season. Also, the majority of the precipitation has resulted from heavy rainfalls, much of which runs off of this higher site and is unavailable

to the trees. The heavy clay content and the lack of topsoil on the top of the hill have also contributed. While the symptoms have appeared only in the last year, damage has occurred since 1980. Increment cores taken from symptomatic trees showed a reduction in radial growth of about 50 percent during the last four years as compared with previous years. Even the few hardwoods that are growing in this pine stand are exhibiting twig dieback indicating the severity of the drought.

As you indicated, during the droughty period of 1983, day time temperatures were extremely high. These temperatures along with the moisture stress probably damaged the twigs of the trees enough to cause the heavy needle cast during the fall of 1983.

We recommend that you observe this stand closely during 1984. With ample rainfall, more than 50 percent of the currently defoliated twigs will have new foliage. Probably no less than 10 percent of the trees will die. You should also be aware that trees under stress are attractive to southern pine bark beetles and easily colonized by several root rot fungi.

If 1984 is a droughty year, additional dieback and mortality can be expected. However, if damage symptoms decrease, you may manage the stand as planned. The clearcut area could be artificially regenerated in pine, allowed to regenerate naturally, or planted as a wildlife food plot.

If Forest Pest Management can assist you with any forest insect or disease problems that occur at Redstone Arsenal, give us a call.

Sincerely,

H. Daniel Brown

H. DANIEL BROWN
Staff Pathologist

William A. Carothers

WILLIAM A. CAROTHERS
Entomologist